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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/826,967	04/06/2001	Bengt Lindoff	040071-495	6303

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EXAMINER	
NGUYEN, DUC M	
ART UNIT	PAPER NUMBER
2685	

DATE MAILED: 06/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/826,967

Applicant(s)

LINDOFF ET AL.

Examiner

Duc M. Nguyen

Art Unit

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The references listed in the information disclosure statements submitted on 5/2/02 has been considered by the examiner (see attached PTO-1449).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 3, 9, 17 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the center of gravity synchronization technique and the preliminary window center position, does not reasonably provide enablement for “a mean **position** of a correlation **function**”. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The claims recited the limitation of “determining a mean position of a correlation function”, it is not clear whether the mean position as recited in the claims is the mean of positions of peak values of a correlation function, nor whether the maximum or largest energy feature is used in determining or selecting the second synchronization position as recited in the claims.

Claim Rejections - 35 USC § 102

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3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims **1, 7, 15, 18-19** are rejected under 35 U.S.C. 102(b) as being anticipated by **Love (US 5,818,876)**.

Regarding claims **1, 7, Love** discloses a method for using two different synchronization techniques, each corresponding to different channel estimation and one of them is selected based on their least error (see Fig. 5, and col. 5, line 37 – col. 6, line 15), this would include all the claimed limitations.

Regarding claim **15**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, since the down converter is an inherent feature of a receiver, and that that the synchronization can only be performed on the baseband signal after down conversion, the claimed limitation is anticipated by Love for providing a down converter as claimed, for synchronizing purpose.

Regarding claims **18-19**, the claims are rejected for the same reason as set forth in claim 1 above. In addition, it is clear that **Love** would disclose such synchronization position is used for subsequence processing (see col. 6, lines 8-15).

5. Claims **1, 7, 13, 15, 18-19** are rejected under 35 U.S.C. 102(e) as being anticipated by **Bottomley et al** (US Pat. Number **6,333**).

Regarding claims **1, 7, Bottomley** discloses a method for adapting detection scheme wherein different synchronization corresponding to different channel estimation are used and is selected based on whether the channel condition is dispersive or non-dispersive (see Fig. 5, col. 5, lines 47 – col. 6, line 38 and col. 4, lines and col. 4, lines 46-49), this would include all the claimed limitations.

Regarding claim **13**, the claim is rejected for the same reason as set forth in claim 7 above. In addition, **Bottomley** discloses the receiver is a mobile station (see col. 3, lines 3-35).

Regarding claim **15**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, **Bottomley** disclose a down converter as claimed, for synchronizing purpose (see col. 3, lines 49-56)

Regarding claims **18-19**, the claims are rejected for the same reason as set forth in claim 1 above. In addition, it is clear that **Bottomley** would disclose such synchronization position is used for subsequence processing (see Fig. 5, block 62 and col. 3, lines 60-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims **2-6, 8-12, 14, 16-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bottomley** in view of **Love**.

Regarding claim **2**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, **Bottomley** discloses the synchronization point is determined based on the maximum of the energy (see **col. 5, lines 55-59**), and wherein the energy is the summing squared amplitude of correlation values over the number of channel taps (see **col. 4, lines 3-15**). Here, although **Bottomley** fail to disclose a window, it is noted that the selection of the number of channel taps (or J value) would work similar as a window as claimed. Further, since the use of a window for improving synchronization detection is known in the art as disclosed by **Love** (see **col. 6, lines 16-19**), it would have been obvious to one skill in the art to further incorporate the above teaching of **Love** to **Bottomley** for providing a window as claimed, so that the maximum value of energy caused by fading could be filtered for improving the reliability of the detection of the synchronization point.

Regarding claim **3**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, **Bottomley** discloses that the delay (synchronization point) can be determined based on the mean values of correlation functions (see **col. 6, lines 1-65**).

Regarding claim **4**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, it is clear that **Bottomley** would disclose selecting the first channel estimate if time dispersion associated with the radio channel is above a threshold as claimed (see **col. 5, lines 10-18** and **col. 6, line 33-35**).

Regarding claim **5**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, **Bottomley** discloses an equalizer is used when the selected channel estimate comprises $J > 1$.

Regarding claim **6**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, since **Bottomley** discloses a CDMA system, it is clear that such signal would comprise a plurality of frames with known sequence as claimed, in order for a receiver to demodulate a receiving signal.

Regarding claims **8-9, 16-17**, the claims are rejected for the same reason as set forth in claims 2-3 above.

Regarding claims **10-12**, the claims are rejected for the same reason as set forth in claims 4-6 above.

Regarding claim **14**, the claim is rejected for the same reason as set forth in claim 1 above. In addition, it is clear that the synchronization method for mobile stations would obviously applicable to base stations and would work equally well.

Conclusion

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Zak et al** (Us 6,084,926), Method and system for demodulating radio signals.
- **Huttunen** (6,438,185), Self-optimizing channel equalization and detection.
- **Dural et al** (US 6,717,996), Digital signal timing synchronization process.

- **Popovic** (US 6,370,397), Search window delay tracking in code division multiple access communication system.

2. **Any response to this action should be mailed to:**


Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for formal communications intended for entry)
(for informal or draft communications, please label "PROPOSED" or "DRAFT")
Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or communications from the examiner should be directed to Duc M. Nguyen whose telephone number is (703) 306-4531, Monday-Thursday (9:00 AM - 5:00 PM). Or to Edward Urban (Supervisor) whose telephone number is (703) 305-4385.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Duc M. Nguyen 
May 9, 04